

What is claimed is:

1. A semiconductor device comprising:

a semiconductor substrate;

5 an element isolation insulating film partially formed in a main surface of said semiconductor substrate and defining an element formation region;

a recessed portion formed by trenching part of said main surface of said semiconductor substrate of a first region in said element formation region and part of a main surface of said element isolation insulating film that is connected to said part of said semiconductor substrate; and

10 a first transistor formed in said first region,

wherein said semiconductor substrate in said element formation region includes a first portion where said recessed portion is formed and a second portion where said recessed portion is not formed, and

15 said element isolation insulating film includes a first portion where said recessed portion is formed to be connected to said first portion of said semiconductor substrate and a second portion where said recessed portion is not formed to be connected to said second portion of said semiconductor substrate,

said first transistor includes:

20 a channel formation region formed in a side of said second portion of said semiconductor substrate;

a first source/drain region formed in said first portion of said semiconductor substrate and a second source/drain region formed in said second portion of said semiconductor substrate that are disposed opposite to each other with said channel formation region interposed therebetween; and

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a gate structure formed on said side of said second portion of said semiconductor substrate and a side of said second portion of said element isolation insulating film and extends on said first portion of said semiconductor substrate and said first portion of said element isolation insulating film.

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2. The semiconductor device according to claim 1, further comprising a first contact plug formed on said gate structure in a portion located on said first portion of said element isolation insulating film.

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3. The semiconductor device according to claim 1, further comprising a plate-like conductive film partially formed on said first portion of said element isolation insulating film and connected to said gate structure.

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4. The semiconductor device according to claim 3, further comprising a first contact plug formed on said plate-like conductive film.

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5. The semiconductor device according to claim 3,
wherein said second portion of said semiconductor substrate has a projecting portion projecting from said second portion of said semiconductor substrate in a direction opposite to said second portion of said element isolation insulating film, and
said semiconductor device further comprises a second contact plug formed on said projecting portion.

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6. The semiconductor device according to claim 3, further comprising:
a second contact plug formed on said first source/drain region;

an interconnection formed on said second contact plug;
a third contact plug formed on said second source/drain region; and
a capacitor formed on said third contact plug.

5 7. The semiconductor device according to claim 6,
wherein said first transistor comprises a plurality of first transistors,
said plurality of first transistors are arranged in a certain direction with said
element isolation insulating film interposed therebetween, and
said gate structure is shared by said plurality of first transistors.

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8. The semiconductor device according to claim 1,
wherein said second portion of said semiconductor substrate has a raised
structure in cross-section, and
said gate structure is formed in contact with both of two opposite sides of said
15 raised structure.

9. The semiconductor device according to claim 1, further comprising a
second transistor formed in a second region of said semiconductor substrate,
wherein said second transistor comprises:

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a gate insulating film formed on said main surface of said semiconductor
substrate;

a gate electrode formed on said gate insulating film; and

a pair of source/drain regions formed in said main surface of said
semiconductor substrate with a channel formation region, under said gate electrode, being
25 interposed therebetween.

10. The semiconductor device according to claim 9,
wherein said first transistor has a gate insulating film in said gate structure, and
said gate insulating film of said first transistor and said gate insulating film of
5 said second transistor have an equal film thickness.